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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/425,401	10/22/1999	JOHN S. YATES JR.	5231.9-4016	9510

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EXAMINER

CHAVIS, JOHN Q

ART UNIT

PAPER NUMBER

2124

DATE MAILED: 04/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/425,401

Applicant(s)

YATES ET AL.

Examiner

John Chavis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 October 1999 and 15 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2.5.10</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement filed 12-17-99 (paper #2), 2-15-02 (paper #5) and 5-13-03 (paper #10), fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered. Furthermore, the references listed in paper #2 appear to be repeated in paper #5 and therefore, paper #2 is considered merely a duplicate for which no response is provided.

### *Claim Rejections - 35 USC § 112, Second Paragraph*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The applicant claims, in claim 19, that his systems interpretations depends on a processor mode not expressed in the binary representation **not expressed in the binary representation** of the instruction; however, the binary translator of claim 24 appears to contradict the feature of claim 19 and therefore, it is not clear what is intended. Therefore, the feature is treated as non-existent as indicated in the parent claim.

### Double Patenting Rejection

4. Claim(s) 1-51 of patent # 09/330,852 contain(s) every element of claim(s) 1-30 of the instant application and as such anticipate(s) claim(s) 1-30 of the instant application.

"A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). " ELI LILLY AND COMPANY v BARR LABORATORIES, INC., United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

However, since both applications are still pending, Claims 1-30 of this application conflict with claims 1-51 of Application No. 09/330,852. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-13 and 15-27 and 29-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Heisch (6,006,033).

**CLAIMS**

1. A method, comprising:  
during a profiled interval of an execution of a program on a computer, recording profile information describing the execution, **without** the program **having been compiled for profiled execution**, the program being coded in an instruction set in which an interpretation of an **instruction depends on a processor mode** not expressed in the binary representation of the instruction, the recorded profile information

**Heisch**

See the title and the abstract.  
See col. 2 lines 14-25

See col. 2 line 65-col. 3 line 3, which optimizes based on actual behavior (i.e. not having been compiled for profiled execution. Therefore, the feature depends on the processor mode, or information not known at

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describing at least all events occurring during the profiled execution interval of the two classes:

- a divergence of execution from sequential execution;

- a processor mode change that is not inferable from the opcode of the instruction that induces the processor mode change taken together with a processor mode before the mode change instruction;

- the profile information further identifying each distinct physical page of instruction text executed during the execution interval.

compile time, col. 5 lines 13-28.

See col. 2 lines 51-59.

See col. 2 lines 38-59.

See col. 4 lines 14-21, which indicates that different parts of the program can be exercised in different sequences or amounts (which inherently includes pages).

2. The method of claim 1:  
and further comprising, without software intervention, recording for later analysis a profile entry noting the source and destination of a control flow event in which control flow of the program execution diverges from sequential execution.

See col. 4 lines 24-30.

3. The method of claim 1, wherein the program is executed on a computer having: an instruction pipeline configured to execute instructions from a memory of the computer; and

Instruction pipelines are utilized in modern processors to keep the system from remaining idle while a single function executes, see any computer dictionary. Heisch is considered to inherently provide for the feature for that same reason, see figs. 2, 4 and 5.

- profile circuitry configured to detect the occurrence of profileable events occurring in the instruction pipeline, and

See col. 12 lines 29-41.

- to direct the instruction pipeline to record profile information describing the profileable events essentially concurrently with the occurrence of the profileable events,

See col. 12 lines 42-54.

- the detecting and recording occurring under hardware control without software intervention.

See again the rejection of claim 1.

4. The method of claim 3, wherein:  
the profile information is recorded into  
general registers of the computer under  
hardware control, without software  
intervention, and without first storing the  
profile information into main memory.

See col. 12 lines 29-64.

5. The method of claim 3, the  
recorded profile information being efficiently  
tailored to identify all bytes of object code  
executed during the profiled execution  
interval, without reference to the binary code  
of the program.

See again the rejection of claim  
1.

6. The method of claim 3, wherein the  
recorded profile information describes a  
sequence of program events during the  
profiled interval of execution, the sequence  
including every event that matches time-  
independent criteria of profileable events to  
be profiled.

See again the abstract,  
independent of procedure of  
other structural boundaries.

7. The method of claim 3, further  
comprising:  
when an instruction fetch of an instruction  
causes a miss in a translation look aside  
buffer (TLB), the fetch of the instruction  
triggering a profileable event, servicing the  
TLB miss and reflecting the corrected state  
of the TLB in the profile information  
recorded for the profileable instruction.

See col. 1 line 61-col. 2  
line 3.

8. The method of claim 1, further  
comprising the steps of:  
executing the program on a first CPU of a  
multiprocessor computer;

See fig. 2.

on a second CPU of the multiprocessor,  
while the execution and profiling of the  
program continues, analyzing the collected  
profile data;

controlling the execution of the program

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on the first CPU based at least in part on the analysis of the collected profile data.

9. The method of claim 1, wherein:  
the profile information is recorded into  
general registers of the computer under  
hardware control, without software  
intervention, and without first storing the  
profile information into main memory.

See the rejection of claim 4.

In reference to claim 10, see the rejection of claim 6.

As per claims 11, 13, and 19-20, see the rejection of claim 3 and fig. 1.

The features of claim 12 are taught via claim 5.

Claims 15-18 are taught via claim 1 above.

In reference to claims 21 and 23, see the rejection of claim 4.

As per claims 22, see the rejection of claim 8 and fig. 1.

The features of claim 24 are inherent in claim 3 to detect the occurrence of  
profileable events.

Claims 25-26 is taught via claims 5-6 above.

In reference to claim 27, see the rejection of claim 13.

As per claims 29, see the rejection of claim 8, which inherently provides for the  
features.

The features of claim 30 are taught via claims 5-6.

The invention taught by Magnusson et al. (IEEE reference) is also considered  
pertinent to the applicant's disclosure; since, it also provides for implementation via  
multiple cpu's (hardware resources) based on their availability in the system, see page



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69, which is based on the binary, see the introduction, and utilizes TLB's (page 64) for page simulation (page 66).

Furthermore, Argrawal (5,768,500) specifically references specialized hardware for profiling in col. 8.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 14 and 28 are rejected under 35 USC 103 as obvious over Heisch in view of Roediger (5,960,198). Heisch does not specifically indicate that a timer is used in his system; however, the feature is taught by Roediger in an analogous art, col. 4 lines 7-13, to enable control over when data is collected, col. 1 lines 49-64 based on a bit, col. 3 lines 3-15, via multiple cpu's (col. 5 lines 42-46) executing simultaneously in parallel (col. 8 lines 14-29) and initiated via hardware (col. 6 lines 61-col. 7 line 8, col. 8 lines 21-29). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Heisch's invention with the teachings of Roediger for the same reasons utilized by Y to enable control over when data is collected to improve performance in specific areas.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Chavis whose telephone number is (703) 305-9665. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703) 305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jqc  
April 15, 2004



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PATENT EXAMINER  
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